

Original Investigation

Correlates of Chilean Adolescents' Negative Attitudes Toward Cigarettes: The Role of Gender, Peer, Parental, and Environmental Factors

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Abstract

Introduction: We examined the association of peer, parental, and environmental factors with negative attitudes toward cigarettes among youth from Santiago, Chile.

Methods: A total of 860 youth from Santiago, Chile, completed questions regarding their lifetime use of cigarettes, intentions to smoke, attitudes toward cigarettes, and questions that assessed peer, parental, and environmental factors.

Results: For both boys and girls, peer disapproval of smoking was associated with more negative attitudes toward cigarettes and peer smoking was associated with less negative attitudes toward cigarettes. Peer pressure was significantly associated with more negative attitudes toward cigarettes for girls only. Parental smoking was associated with less negative attitudes and parental control with more negative attitudes, but these associations were significant in the overall sample only. School prevention efforts and exposure to cigarette ads were not associated with cigarette attitudes. Difficulty in accessing cigarettes was positively associated with negative attitudes for boys and girls.

Conclusion: Smoking prevention efforts focus on attitude change, but scant information is available about the experiences that influence Chilean youth's attitudes toward cigarettes. Results from the current study suggest that prevention efforts could benefit from gender-specific strategies. Girls' but not boys' attitudes were influenced by peer pressure. Moreover, negative attitudes toward cigarettes were associated with lower current smoking in girls only. Parental smoking was an important influence on youth's attitudes toward cigarettes. Efforts to reduce smoking among Chilean youth may benefit from concurrently reducing parental smoking.

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Introduction

About 250 million children and adolescents alive today will die from tobacco use (Navarro, 2001), and 70% of these children live in developing countries (Prokhorov et al., 2006). According to global tobacco use estimates, the Region of the Americas (which included Latin America) has one of the highest rates of past-month adolescent smoking (17.5%; Warren, Jones, Eriksen, Asma, & Global Tobacco Surveillance System Collaborative Group, 2006), and in Latin America, Chilean youth have the highest smoking prevalence (CICAD, 2009/2010). More than 70% of Chilean children, 14 years or younger, have smoked cigarettes, indicating that Chilean youth begin smoking at young ages (CICAD, 2009/2010). Moreover, Chilean girls reported higher lifetime (71%) and past-month (35%) smoking than boys (65% and 30%, respectively). According to data from the Global Youth and Tobacco Survey (Center for Disease Control and Prevention, 2008), 66% of school-aged children in Santiago, Chile, had ever smoked cigarettes, and about 34% of all students were currently smoking cigarettes. These high rates of smoking indicate that many Chilean youth will be susceptible to transitioning to nicotine dependence and heavy smoking as well as the harmful consequences of smoking, such as tobacco-related disease and death (Prokhorov et al., 2006). Yet, only scant information is available about why Chilean youth smoke.

Researchers have demonstrated a significant association of adolescents' smoking-related attitudes with smoking and intentions to smoke (Barber et al., 2005; Epstein, Botvin, & Spoth, 2003; Ivanovic, Castro, & Ivanovic, 1997; Johnston, O'Malley, Bachman, & Schulenberg, 2010; Otten, Harakeh, Vermulst, Van, & Engels, 2007; Otten, Wanner, Vitaro, & Engels, 2008; Rhodes, Roskos-Ewoldsen, Edison, & Bradford, 2008). Smoking-related attitudes develop before youth smoke. For this reason, attitude change is often a focus of youth smoking preventions

and interventions (Wang, Fitzhugh, Eddy, & Westerfield, 1996). It is therefore vital to understand the experiences that influence Chilean youth's attitudes toward cigarettes as this knowledge can inform the development of targeted youth smoking prevention and intervention programs in Chile.

Theory of Reasoned Action, Smoking-Related Attitudes, and Youth Smoking

The theory of reasoned action is frequently employed to understand why youth smoke. This theory broadly postulates that intentions influence an individual's decision to perform a specific behavior, and intentions are determined by individuals' attitudes and subjective norms toward a specific behavior (e.g., Madden, Ellen, & Ajzen, 1992). Attitudes are defined as an individual's evaluation of a specific behavior, and subjective norms are viewed as the pressure individuals perceive to either perform or not to perform a specific behavior (e.g., McMillan, Higgins, & Conner, 2005). In regard to youth smoking, the theory suggests that youth smoke because their smoking-related attitudes and subjective norms predict intentions to smoke, and their intentions to smoke in turn predict youth's decision to try cigarettes (e.g., McMillan et al., 2005). Studies have shown that intentions to smoke are associated with current smoking (e.g., Epstein et al., 2003; McMillan et al., 2005), and that attitudes and social norms are associated with intentions to smoke (e.g., Harakeh et al., 2004). Research has also revealed that factors other than attitudes and pressure to smoke can predict current smoking and intentions to smoke. For example, Epstein et al. (2003) reported that friend smoking, adult smoking, drug refusal assertiveness skills, drug refusal techniques, and prosmoking attitudes were associated with current and future smoking. In all, the theory of reasoned action has proven useful in explaining youth smoking. However, it has been limited in its application as it does not account for contextual influences on youth's smoking-related attitudes. Moreover, existing research is based on youth from developed countries. With the exception of one study by Ivanovic et al. (1997), who found a negative relationship between youth smoking and the belief that smoking was bad for one's health, we were unable to find studies attempting to explain how Chilean youth acquire smoking-related attitudes. The present study examines the associations of contextual influences (i.e., peer, parent, and environmental factors) on Chilean youth's negative attitudes toward cigarettes.

Contextual Influences and Smoking-Related Attitudes in Youth

Adolescent smoking is influenced by peer, parental, and environmental factors (Otten et al., 2008), and adolescents' smoking-related attitudes seem to be influenced by the same experiences (Alexander, Piazza, Mekos, & Valente, 2001; Engels & Willemsen, 2004; Nelson, 2003; Otten et al., 2007; Smet, Maes, De Clercq, Haryanti, & Winarno, 1999). Research with youth from Spain has shown that external pressure to smoke (i.e., friend and sibling smoking) and sensitivity to cigarette advertisements were associated with attitudes toward tobacco. Specifically, external pressure to smoke (i.e., friend and sibling smoking) was associated with more positive tobacco attitudes, and sensitivity to advertisements was associated with more negative tobacco attitudes (Barber et al., 2005). In a study with youth from the Netherlands, parental smoking was associated with more

positive attitudes toward cigarettes, while parental knowledge about children's whereabouts (i.e., parental monitoring) and the parent-child relationship were associated with more negative attitudes toward cigarettes (Harakeh et al., 2004). In another study with Dutch youth, parental disapproval of adolescent smoking, house rules about smoking, and warnings about the dangers of smoking were associated with low prosmoking attitudes (Engels et al., 2004). In all, previous research has demonstrated the influence of peers, parents, and advertisements on youth's smoking-related attitudes.

While knowledge gained from previous studies has furthered our understanding of the experiences that influence youth's attitudes toward cigarettes, it also provides a fragmented understanding. Previous studies have examined the influence of two, three, or possibly four factors on youth's smoking-related attitudes. In real life, adolescents experience a number of peer, parental, and environmental influences. Therefore, research is needed that examines how all these factors together influence smoking-related attitudes in youth. The present study examined the associations of multiple peer, parental, and environmental factors on youth's smoking-related attitudes, thereby providing a more complete understanding of contextual influences on smoking-related attitudes in youth from Chile. Unlike previous studies, we examined the influence of school smoking prevention efforts and cigarette inaccessibility on Chilean youth's attitudes toward cigarettes. Youth's exposure to school-based drug prevention programs and the ease with which youth can access cigarettes in their neighborhoods, from friends, and relatives can also play a role in how cigarettes are perceived (Nelson, 2003; Smet et al., 1999; Tyas & Pederson, 1998). Thus, understanding whether and how these variables are associated with youth's cigarette attitudes are important.

The majority of past research was conducted with youth in developed countries, providing limited understanding of smoking and smoking-related attitudes in Chilean youth. The smoking-related cultural context of Chilean youth differs from that of youth from developed countries. For example, Chile has only recently committed to implement strategies to reduce tobacco use. In 2005, Chile ratified the World Health Organization Framework Convention on Tobacco Control, which was implemented to eliminate smoking in all indoor public places and workplaces (Erazo et al., 2010), and in 2006, Chile initiated the use of graphic images on all cigarette packaging and advertising. Moreover, compared with developed countries, there is less enforcement of workplace smoking bans and sales of cigarettes to minors in Chile (Shafey, Dolwick, & Guindon, 2003; Thrasher et al., 2006). The different cultural context between youth in Chile and youth in other countries can differentially influence their smoking-related attitudes and behaviors, stressing the need to better understand these phenomena in Chilean youth.

Gender, Smoking, and Smoking-Related Attitudes

Factors associated with smoking and smoking-related attitudes often differ for boys and girls (Epstein et al., 2003; Nelson, 2003; Tyas & Pederson, 1998). Charlton and Blair (1989) reported that parental smoking and prosmoking attitudes predicted smoking in girls only. Nelson (2003) found a negative association between smoking and school-based education programs on

the dangers of smoking among girls only. The effects of peer influences on youth smoking and smoking-related attitudes can also vary by gender (Epstein et al., 2003; Hu, Flay, Hedeker, Siddiqui, & Day, 1995). A study with youth in the United States (Epstein et al., 2003) found that peer smoking norms predicted boys', but not girls', future smoking and that prosmoking attitudes were associated with future smoking in boys and girls. Another study with youth in England showed that for girls, positive and normative beliefs about smoking predicted smoking at a later time. For boys, negative beliefs about smoking were associated with less smoking (Grogan, Conner, Fry, Gough, & Higgins, 2009). In all, previous research indicates that girls' and boys' smoking behaviors are differentially affected by social influences, and these differences might be particularly true for Chilean youth.

Hispanic families are frequently portrayed as socializing their children according to strict gender roles where it is more acceptable for men than for women to smoke (e.g., Bethel & Schenker, 2005). Consistent with these gendered smoking norms, Hispanic men are twice as likely to smoke than Hispanic women (Center for Disease Control and Prevention, 2008). These data suggest that girls in Latin American countries such as Chile should have lower smoking prevalence than boys. However, contrary to these expectations, Chilean girls have higher smoking rates than boys (CICAD, 2009/2010), and research is needed that examines why girls in Chile smoke at higher rates than boys. Gendered views of smoking may exist in Chile, and gendered smoking norms may influence the smoking-related attitudes of boys and girls. Chilean youth's attitudes toward smoking may influence their smoking and intentions to smoke. Gendered socialization may also expose Chilean boys and girls to distinctive experiences with peers, relatives, and teachers. To better understand why girls in Chile smoke at higher rates than their male counterparts, research is needed that examines if and how social influences differentially affect the smoking-related attitudes of Chilean boys and girls.

The Current Study

To fill the gaps in the literature, we examined the influence of peer, parental, and environmental factors on negative attitudes toward cigarettes in youth from Santiago, Chile. We also examined the associations of smoking-related attitudes with smoking and intentions to smoke. Consistent with the theory of reasoned action, we expected negative attitudes toward cigarettes to be associated with lower lifetime smoking, current smoking, and intentions to smoke. We also examined whether the associations of attitudes with smoking and intentions to smoke varied by gender. In all, we expected girls to have lower levels of negative attitudes, a plausible explanation for the research showing that Chilean girls smoke at higher rates than boys. Based on past research, we hypothesized that peer smoking, peer pressure, and parental smoking would be associated with less negative attitudes toward cigarettes. We also hypothesized that peer disapproval of smoking, parental monitoring, parent-child communication, and parental control would be associated with more negative attitudes toward cigarettes. We further explored the role of school smoking prevention, prosmoking advertisements, and cigarette inaccessibility on negative attitudes.

Methods

Sample and Procedures

We used cross-sectional data from the Santiago Longitudinal Study, a study of community-dwelling youth in Santiago, Chile, conducted between 2008 and 2010. This project is a collaboration between a U.S. and a Chilean institution, with funding from the National Institute on Drug Abuse. Adolescents were recruited from a convenience sample of about 1,100 families that participated in a study of nutrition when youth were infants and 10 years old (Lozoff et al., 2003). We obtained the family's contact and demographic information from the earlier study and were able to recruit 1,031 youth. There were no significant differences in demographic characteristics between the youth who participated and the youth who did not. The majority of youth who did not participate had relocated, and the study team was unable to contact them. Only youth who had no missing data in the variables of interest were included in the present study, resulting in a final sample of 860. A comparison of the demographic variables (i.e., age, sex, and socioeconomic status [SES]) between the final ($N = 860$) and the omitted sample ($N = 186$) revealed that youth in the omitted sample were older ($M = 14.7$, $SD = 1.4$) than the final sample ($M = 13.1$, $SD = 1.3$).

Adolescents completed a 2-hr interviewer-administered questionnaire. Interviews were conducted in Spanish by Chilean psychologists trained in the administration of standardized instruments. Adolescent assent and parental consent were obtained by the interviewers prior to the interviews. The study received approval from the Institutional Review Boards of the corresponding universities. The questionnaire was created by combining standardized instruments commonly used in research in the United States and Chile. A detailed description of the study design has been described elsewhere (Bares, Delva, Grogan-Kaylor, & Andrade, in press).

Measures

Negative Attitudes Toward Cigarettes

Negative attitudes toward cigarettes were measured with four items from the U.S. Monitoring the Future study (Johnston et al., 2010). Sample items are "I would prefer to date people who don't smoke" and "I think that becoming a smoker reflects poor judgment." Adolescents indicated the degree to which they agreed with each statement. Response options ranged from *mostly disagree* (1) to *mostly agree* (5). We created a composite score so that higher scores represent more negative attitudes (Cronbach's $\alpha = .71$).

Lifetime Cigarette Smoking

To assess lifetime smoking, youth responded to one question, "Have you ever smoked all or part of a cigarette?" Response options were *yes* (1) and *no* (0). This question is commonly used in national surveys of school-attending youth in the United States (Johnston et al., 2010) and Latin America, including Chile (CICAD, 2009/2010).

Past Thirty-Day Smoking

Current smoking was assessed with the following question: "When was the last time you smoked cigarettes?" Response options included 1 = *in the past 30 days*, 2 = *more than a month ago but within the past year*, and 3 = *more than a year ago*. Only

youth who indicated having smoked in their lives were asked this question. This question was recoded as 1 = *smoked in the past 30 days* and 0 = *not smoked in the past 30 days*.

Intentions to Smoke

Intentions to smoke within one year was assessed with the following question: "Do you think that sometime this year you will try cigarettes?" Adolescents chose among four response options: *definitely yes* (4), *probably yes* (3), *probably no* (2), and *definitely no* (1). Due to the skewed distribution of this variable, we recoded this question by collapsing the response options *definitely yes* and *probably yes* into one, and the same was done with *definitely no* and *probably no*. Intentions to smoke within five years were assessed with the same question described above with the exception that the question asked about smoking within five years. The response options for this question were collapsed in the same way as was done for the question regarding intentions within one year.

Peer Smoking

Adolescents were asked to indicate, on a scale ranging *none* (1) to *all* (5), how many of their friends they thought smoked cigarettes (Johnston et al., 2010).

Peer Disapproval of Smoking

Adolescents' perception of peer disapproval of smoking was measured with the following question: "How do you think your close friends feel (or would feel) about you smoking one or more packs of cigarettes?" (Johnston et al., 2010). Youth indicated on a scale ranging from *not disapprove* (1) to *strongly disapprove* (3) their perception of their friends' disapproval. Higher scores represent more peer disapproval of smoking.

Peer Pressure to Smoke Cigarettes

Adolescents indicated how much pressure to smoke they felt from their friends and schoolmates. Response options ranged from *none* (1) to *a lot* (4; Johnston et al., 2010). Higher scores represent more peer pressure to smoke.

Parent Smoking

To assess whether adults in adolescents' lives smoked, adolescents were asked, "During the past 12 months, do you think your parents or someone who takes care of you has tried cigarettes?" This question was dummy coded with *yes* (1) and *no* (0).

Parent Communication About the Dangers of Using Drugs

One question asked adolescents to rate the frequency with which they had talked with their parents or another caregiver in the past twelve months about the dangers of using drugs. The response options ranged from "*none* (1) to *many times* (4), and higher scores represent more parent-child communication about the dangers of youth using drugs.

Parental Monitoring

Youth were asked seven questions to assess the extent to which parents monitor their children's activities. The variables were adapted from Paterson and Capaldi (1998) and have been used by other substance use researchers (Chilcoat & Anthony, 1996). Sample questions included "How often would your mom/dad or guardian know if you came home an hour late on weekends?" and "How often, before you go out, do you tell your mom/dad

or guardian when you will be back?" Response categories were *all of the time* (1), *most times* (2), *sometimes* (3), *hardly ever* (4), and *never* (5). After reverse scoring corresponding items, scores were added up. Higher scores represent more parental monitoring (Cronbach's $\alpha = .67$).

Parental Control

An eight-item measure was used to measure youth involvement in decision making about adolescent issues (Brody, Moore, & Gleib, 1994). Adolescents were asked to indicate how decisions were made in their family in regards to a list of statements, including "How late you can stay up on school nights," "Which friends you can spend time with," and "How you dress." The response options were *My parent(s) decide* (1), *My parent(s) after discussing it with me* (2), *We decide together* (3), *I decide after discussing it with my parents* (4), and *I decide by myself* (5). Scores were reverse coded and added with higher scores representing more parental control (Cronbach's $\alpha = .66$).

School Prevention of Cigarette Smoking

To measure students' perception of school prevention of cigarette smoking, adolescents were asked the following question: "In your present school, how vigorous are the teachers and administrators in their attempts to prevent students from smoking?" Response options ranged from *not at all* (1) to *very rigorous* (5), with higher scores representing more school prevention.

Cigarette Ads Exposure Encouraging Cigarette Use

To assess exposure to cigarette ads that encourage cigarette use, adolescents were asked to rate the frequency with which they had seen commercials on TV or heard commercials on the radio that encouraged them to buy cigarettes. Response options ranged from *not at all* (1) to *more than once a day* (6), and higher scores represent more exposure to cigarette ads.

Cigarette Inaccessibility

A question assessed youth's perception of how difficult they thought it would be to get cigarettes if they wanted some (Johnston et al., 2010). Response options ranged from *very easy* (1) to *I would not be able to* (5). Higher scores represent more perceived difficulty.

Demographic Characteristics

Age and sex were assessed based on adolescents' self-reports. SES status of the family was assessed based on parents' reports, and a composite score was created that included mother's and father's completed years of education, family income, and combined occupational prestige between mother and father.

Analytic Strategy

First, we calculated descriptive statistics for the entire sample and for each gender (see Table 1). Next, we compared boys and girls on our study variables. We used *t* test for continuous variables and chi-square tests for categorical variables. Then, we examined correlations among all study variables (see Table 2), and we also conducted a multicollinearity diagnostic test to ensure that multicollinearity was not a problem. After examining descriptive statistics, we ran four separate multiple logistic regressions to determine the associations of negative attitudes toward cigarettes with lifetime smoking, current

Table 1. Descriptive Characteristics for the Overall Sample, for Girls, and for Boys

Variables	Overall sample (n = 860)	Boys (n = 442)	Girls (n = 418)
	M (SD) or %	M (SD) %	M (SD) or %
Demographics			
Age (in years)	14.68 (1.35)	14.65 (1.37)	14.72 (1.33)
Socioeconomic status	0.05 (2.78)	0.08 (2.70)	0.05 (2.87)
Peer factors			
Peer disapproval	2.31 (0.77)	2.24 (0.80)	2.38 (0.72)*
Peer smoking	2.66 (1.18)	2.51 (1.16)	2.82 (1.18)**
Peer pressure	1.27 (0.67)	1.26 (0.67)	1.26 (0.65)
Parent factors			
Parent smoking	78.5	81.6	75.9*
Parent communication	2.53 (1.06)	2.49 (1.05)	2.57 (1.07)
Parental monitoring	27.37 (5.33)	26.72 (5.31)	28.28 (5.12)**
Parental control	16.81 (5.75)	16.73 (5.12)	17.03 (6.25)
Environmental factors			
School prevention	3.82 (1.20)	3.88 (1.21)	3.77 (1.18)
Exposure to ads	5.35 (3.04)	5.20 (3.03)	5.57 (2.97)
Cigarette inaccessibility	1.84 (1.16)	1.84 (1.16)	1.82 (1.16)
Dependent variables			
Negative attitudes	12.73 (3.51)	13.03 (3.54)	12.41 (3.47)*
Lifetime smoking	42.2	41.6	42.8
Past thirty-day smoking	24.7	55.3	64.9
Future smoking—1 year	37.2	33.3	41.4*
Future smoking—5 year	62.0	55.4	69.1**

Note. *t* tests and chi-square statistics were used to compare the variables' means and percentages between boys and girls.
p* < .05. *p* < .001.

smoking, future smoking within one year, and future smoking within five years, adjusting for demographic variables. Lastly, we used hierarchical multiple regression to examine the effects of peer, parental, and environmental factors on youth's attitudes toward cigarettes, controlling for demographic variables.

Specifically, we ran a total of four models. In Model 1, we examined the associations of age, SES, and gender with negative attitudes toward cigarettes. In Model 2, we added peer factors to our demographic variables. In Model 3, we added parental factors to the variables examined in Model 2, and in Model 4, we added environmental factors. We used hierarchical multiple

Table 2. Intercorrelations Between All Independent Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Gender (1 = G, 0 = B)	–													
2 Age	0.03	–												
3 Socioeconomic status	0.00	0.04	–											
4 Peer disapproval	0.09*	–0.19**	–0.02	–										
5 Peer smoking	0.12**	0.39**	0.06	–0.31**	–									
6 Peer pressure	–0.01	–0.03	–0.07*	–0.05	0.07*	–								
7 Parental smoking	–0.07*	0.02	0.02	–0.02	0.11**	0.01	–							
8 Parental communication	0.02	–0.09**	–0.01	0.13**	–0.06	–0.06	0.01	–						
9 Parental monitoring	0.14**	–0.12**	0.09**	0.20**	–0.20**	–0.11**	0.00	0.26**	–					
10 Parental control	–0.03	–0.40**	–0.04	0.21**	–0.25**	0.06	–0.01	0.11**	0.30**	–				
11 School prevention	–0.05	–0.10**	–0.01	0.15**	–0.16**	–0.01	–0.03	0.14**	0.12**	–0.10**	–			
12 Prosmoking ads	0.05	–0.03	0.03	0.05	–0.01	0.05	0.03	0.11**	0.00	–0.02	0.00	–		
13 Cigarette inaccessibility	0.00	–0.40**	–0.05	0.20**	–0.35**	–0.01	–0.07*	0.04	0.17**	–0.26**	0.10**	–0.03	–	
14 Negative attitudes	–0.09**	–0.27**	–0.02	0.24**	–0.38**	0.03	–0.09*	0.08*	0.20**	0.25**	0.09**	0.04	0.28**	–

Note. Categorical measures: gender, parental smoking, lifetime smoking, future smoking—1 year, and future smoking—5 years.
p* < .05. *p* < .01.

linear regression because we wanted to examine whether each new group of variables added information to the prediction produced by the previous blocks of variables (Leech, Barrett, & Morgan, 2008). For example, we were interested in examining what parental factors added to the prediction of peer factors and what environmental factors added to the predictions of peer and parental factors. We decided to examine the influence of peer factors first because peer factors have been shown to be the most consistent predictors of youth smoking behaviors (Chilcoat, Dishion, & Anthony (1995); Epstein et al., 2003; Otten et al., 2008; Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001). Parental factors have also been shown to have a strong influence on youth smoking, and therefore, we added parental factors second (Tyas & Pederson, 1998). We added environmental factors last because in Chile, less is known about the influence of environmental factors on youth smoking behaviors and because we considered these factors to be more distal than those of peers and parents.

Analyses were first conducted with the overall sample. We then stratified the analyses by gender because conceptually, we wanted to explore gender differences and empirically examine how all the study's independent variables, entered in blocks as described earlier, were associated with each of the dependent variables. Furthermore, Baron and Kenny (1986) have suggested to run regressions separately for each group (in the present study for boys and girls) when the moderator is a dichotomous variable, such as gender, and when the independent variable is continuous. In the present study, the majority of the independent variables were continuous in nature, and the moderator was a dichotomous variable. We declared findings to be statistically significant when findings met a p value of .05 or lower. All analyses were conducted with the PASW Statistics 18 software (SPSS Inc., 2010).

Results

Demographic Statistics

Table 1 shows demographics for the overall sample ($N = 860$), for boys ($N = 442$; 51.4%), and for girls ($N = 418$; 48.6%). The mean age was 14.7 ($SD = 1.4$). Girls had higher mean scores on peer disapproval ($p < .05$), parental monitoring ($p < .001$), and number of peers who smoke ($p < .001$) than boys. More boys than girls reported having parents who smoked ($p < .05$), and more girls than boys reported intentions to smoke. Approximately 10% more girls than boys reported past thirty-day smoking, but this difference was not statistically significant ($p = .65$). Boys had higher mean scores on negative attitudes than girls ($p < .05$).

Table 2 shows the correlations among our independent variables. Although many of these correlations were statistically significant, their magnitude was small to moderate, suggesting low multicollinearity. Multicollinearity diagnostics further indicated that multicollinearity was not a problem. The variance inflation factors were relatively low, ranging from 1.00 to 1.44.

Associations of Negative Attitudes Toward Cigarettes With Lifetime Smoking, Current Smoking, and Future Smoking

Negative attitudes toward cigarettes were negatively associated with lifetime smoking, current smoking, future smoking—1 year,

and future smoking—5 years. In the logistic regression with lifetime smoking as outcome, the odds ratio (OR) for negative attitudes toward smoking was 0.81 ($p < .001$), after controlling for gender, age, and SES. In the analysis with current smoking as outcome, the OR for negative attitudes toward cigarettes was 0.89 ($p < .05$). For future smoking within one year, the OR for negative attitudes toward cigarettes was 0.81 ($p < .001$), and for future smoking within five years, the OR was 0.86 ($p < .001$). Results of the stratified analyses revealed that the associations of negative attitudes with current smoking differ by gender. For girls, negative attitudes toward cigarettes was associated with lower odds of current smoking ($OR = 0.84$, $p < .05$), and this association was not significant for boys ($OR = 0.94$, $p = ns$).

Associations of Negative Attitudes Toward Cigarettes With Contextual Factors

Tables 3 and 4 show results of three hierarchical multiple regression models utilized to examine the associations of youth's negative attitudes toward cigarettes with peer, parental, and environmental factors. Overall, the results show that peer factors had the greatest influence on Chilean youths' negative attitudes toward cigarettes. As seen in Model 2 of Table 3, peer factors accounted for 18% of the variance in negative attitudes toward cigarettes, after controlling for age, gender, and SES. In the analysis with boys only (second part of Table 4), peer factors accounted for 19% of the variance, and among girls (first part of Table 4), peer factors accounted for 16% of the variance. Furthermore, the results show that peer disapproval of smoking was associated with more negative attitudes toward cigarettes, and peer smoking was associated with less negative attitudes toward cigarettes. Specifically, youth with friends who smoked scored lower on negative attitudes toward cigarettes than those who did not have friends who smoked. The results also demonstrated that peer smoking had a greater influence on Chilean youth's negative attitudes toward cigarettes than perceived peer disapproval. Peer pressure was not associated with negative attitudes toward cigarettes among the overall sample and among boys.

As shown in Model 3 of Table 3, parental smoking was negatively associated with negative attitudes toward cigarettes in the overall sample, and parental control was associated with more negative attitudes. That is, youth with parents who smoked endorsed more positive cigarette attitudes than those without parents who smoked, and those who endorsed higher levels of parental control endorsed more negative cigarette attitudes. Additionally, as shown in Model 3 of Tables 3 and 4, parental factors were not associated with negative cigarette attitudes among boys.

As shown in Model 4 of Tables 3 and 4, school prevention and exposure to prosmoking ads had no effect on youth's cigarette attitudes. Cigarette inaccessibility was positively associated with adolescents' negative cigarette attitudes. The more difficulty youth perceived accessing cigarettes, the more negative their attitudes.

Discussion

The theory of reasoned action is often used to explain why youth smoke. This theory postulates that youth smoke because

Table 3. Results of Hierarchical Multiple Regression Analyses Predicting Negative Attitudes Toward Smoking Among the Overall Sample

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
Gender	-0.59	0.24	-.08*	-0.44	0.23	-.06	-0.53	0.23	-.08*	-0.56	0.23	-.08*
Age	-0.68	0.09	-.26**	-0.34	0.09	-.13**	-0.26	0.10	-.10*	-0.19	0.10	-.07
Socioeconomic status	-0.01	0.04	-.01	0.01	0.04	.01	0.01	0.04	.01	0.01	0.40	.01
Peer disapproval	-	-	-	0.67	0.16	.15**	0.59	0.16	.13**	0.56	0.16	.12*
Peer smoking	-	-	-	-0.82	0.11	-.28**	-0.74	0.11	-.25**	-0.67	0.11	-.22**
Peer pressure	-	-	-	0.28	0.17	.06	0.28	0.17	.05	0.27	0.17	.05
Parent smoking	-	-	-	-	-	-	-0.64	0.28	-.07*	-0.60	0.28	-.07*
Communication	-	-	-	-	-	-	0.04	0.11	.01	0.04	0.11	.01
Monitoring	-	-	-	-	-	-	0.03	0.02	.05	0.03	0.02	.04
Control	-	-	-	-	-	-	0.05	0.02	.09*	0.05	0.02	.08*
School prevention	-	-	-	-	-	-	-	-	-	-0.02	0.10	.00
Exposure to ads	-	-	-	-	-	-	-	-	-	0.03	0.04	.03
Cigarette accessibility	-	-	-	-	-	-	-	-	-	0.04	0.11	.12*
R ²			.08			.18			.20			.21
ΔR^2			.08			.10			.02			.01

Note. * $p < .05$ ** $p < .001$.

their smoking attitudes predict intentions to smoke that in turn predict whether youth smoke or not. The theory of reasoned action has proven useful in explaining youth smoking, but it has been limited because it does not take into account the experiences that influence youth attitudes toward cigarettes. The current study contributes to this line of research by examining how a range of peer, parental, and environmental influences correlated with Chilean youth's negative attitudes toward cigarettes.

Research with youth from countries other than Chile has revealed significant associations of social factors with smoking-related attitudes in youth. It is important to understand which experiences influence Chilean youth's smoking-related attitudes because attitudes have been shown to be directly associated with youth smoking and intentions to smoke. Smoking prevalence among youth from Chile is high. The cultural context of Chilean youth differs from the cultural context of youth from other countries, stressing the need to examine how peer, parental, and environmental factors influence the smoking-related attitudes of youth in Chile.

Consistent with the theory of reasoned action and our expectations, youth with more negative cigarette attitudes had lower odds of lifetime, current smoking, and future smoking. These results show that the link between smoking-related attitudes and cigarette smoking is also valid for Chilean youth, stressing the need to target smoking-related attitudes in reducing youth smoking in adolescents from Chile. We also found that the association between more negative attitudes toward cigarettes and lower odds of current smoking was significant for girls but not for boys. Moreover, as hypothesized, girls in the current study endorsed more positive attitudes toward cigarettes than did boys. In all, these results suggest that interventions and preventions targeted at changing youth's attitudes toward cigarettes might be particularly beneficial for reducing current smoking in girls, which is vital because they have higher rates of current and lifetime smoking compared with boys.

Consistent with previous work on the role of peers on youth smoking (Epstein et al., 2003; Otten et al., 2008; Simons-Morton et al., 2001), peer factors had the strongest influence on Chilean youth's negative attitudes toward cigarettes. Peer disapproval of smoking was associated with more negative attitudes, and peer smoking was associated with more positive attitudes. Surprisingly, peer pressure was associated with more negative attitudes but only among girls. This finding was surprising because in research with youth from Spain, external pressure to smoke was associated with less negative tobacco attitudes (Barber et al., 2005). As such, we expected peer pressure to be associated with less, not more, negative attitudes. It is possible that girls who experience peer pressure endorse negative smoking-related attitudes before their friends pressure them to smoke and that their negative views become reinforced by feeling pressured to do something they dislike. Alternatively, it is possible that girls who do not smoke have more nonsmoking friends and experience pressure from peers who do not belong to their social network (Hoffman, Sussman, Unger, & Valente, 2006), and it is possible that experiencing peer pressure from individuals outside of Chilean girls' social network may reinforce negative views toward cigarettes. Both of these explanations could be true, and further research is needed to test these hypotheses.

Peer pressure to smoke did not influence boys' smoking-related attitudes. It is possible that peer pressure to smoke in Chilean boys leads to smoking not by creating more positive smoking-related attitudes but through another pathway, and more research is needed to better understand these associations. It is also possible that although Chilean youth experience peer pressure, family factors protect youth from the negative consequences of peer pressure (Ivanovic et al., 1997). In one study on Chilean adolescents, time spent with relatives was inversely associated with youth smoking (Ivanovic et al., 1997).

There is also growing evidence of cross-cultural differences in the association of perceived peer smoking and youth smoking.

Table 4. Results of Hierarchical Multiple Regression Analyses Predicting Negative Attitudes Toward Smoking by Gender

Variable	Model 1			Model 2			Model 3			Model 4		
	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
Girls only												
Age	-0.51	0.13	-.20	-0.17	0.13	-.07	-0.11	0.14	-.04	-0.05	0.14	-.02
SES	-0.01	0.06	.00	0.02	0.06	.02	0.02	0.06	.02	0.04	0.06	.03
Peer disapproval	-	-	-	0.82	0.24	.17*	0.69	0.24	.14*	0.67	0.24	.14*
Peer smoking	-	-	-	-0.84	0.15	-.29**	-0.71	0.16	-.24**	-0.63	0.16	-.21**
Peer pressure	-	-	-	0.57	0.25	.11*	0.61	0.25	.12*	0.59	0.25	.11*
Parent smoking	-	-	-	-	-	-	-0.71	0.38	-.09	-0.64	0.38	-.08
Communication	-	-	-	-	-	-	0.23	0.16	.07	0.21	0.16	.06
Monitoring	-	-	-	-	-	-	0.05	0.04	.07	0.04	0.04	.07
Control	-	-	-	-	-	-	0.07	0.04	.10	-0.06	0.04	-.10
School prevention	-	-	-	-	-	-	-	-	-	-0.04	0.14	-.01
Exposure to ads	-	-	-	-	-	-	-	-	-	0.04	0.05	.03
Cigarette accessibility	-	-	-	-	-	-	-	-	-	0.37	0.15	.13*
R ²			.04			.16			.20			.21
ΔR^2			.04			.13			.03			.01
Boys only												
Age	-0.83	0.12	-.32**	-0.51	0.13	-.20**	-0.43	0.14	-.17*	-0.36	0.14	-.14*
SES	-0.01	0.06	-.01	0.00	0.06	.02	0.01	0.06	.01	0.01	0.06	.00
Peer disapproval	-	-	-	0.56	0.22	.13*	0.55	0.22	.12*	0.51	0.22	.11*
Peer smoking	-	-	-	-0.79	0.16	-.26**	-0.75	0.16	-.25**	-0.69	0.16	-.23**
Peer pressure	-	-	-	0.03	0.23	.00	0.01	0.23	.00	0.01	0.23	.00
Parent smoking	-	-	-	-	-	-	-0.47	0.42	-.05	-0.45	0.42	-.05
Communication	-	-	-	-	-	-	-0.15	0.16	-.05	-0.13	0.16	-.04
Monitoring	-	-	-	-	-	-	0.03	0.03	.04	0.02	0.03	.03
Control	-	-	-	-	-	-	-0.04	0.03	-.06	-0.03	0.03	-.05
School prevention	-	-	-	-	-	-	-	-	-	0.00	0.14	.00
Exposure to ads	-	-	-	-	-	-	-	-	-	0.03	0.05	.02
Cigarette accessibility	-	-	-	-	-	-	-	-	-	0.32	0.16	.10*
R ²			.11			.19			.20			.21
ΔR^2			.11			.09			.01			.01

Note. SES = socioeconomic status.

* $p < .05$. ** $p < .001$.

Shih (2010) found that among a diverse sample of middle-school students in the United States, Hispanics had higher lifetime and smoking prevalence than youth from other races and ethnicities. Moreover, the results from this study revealed that while perceived peer smoking explained why Asian American students smoked at lower rates than did non-Hispanic Whites, perceived peer smoking did not explain why Hispanic students smoked at higher rates than non-Hispanic White students. These findings point to existing cross-cultural differences in smoking-related influences on youth smoking. Moreover, research with Hispanic and non-Hispanic White adults in the United States has revealed cross-cultural differences in attitudes toward smoking (Marin, Marin, Perez-Stable, & Otero-Sabogal, 1990). For example, in the study of Marin et al. (1990), for Hispanic adults, family-related consequences of smoking had a stronger association with smoking-related attitudes than it had for non-Hispanic whites. This finding provides support for the argument that family factors may play a greater role in Chilean youth's attitudes than may play peer pressure. The study findings may reflect cross-cultural differences in smoking-related attitudes. In the event of cross-cultural differences between

youth in Chile and youth in other countries, smoking preventions and interventions used in countries other than Chile may not be as effective for Chilean youth. Epstein et al. (2003) demonstrated that drug refusal assertiveness and drug refusal skills were associated with significantly lower current smoking prevalence and future smoking. It is possible that teaching Chilean youth to *say no to cigarettes* or teaching them *how to say no to cigarettes* is not as important as it might be for youth from the United States as youth in our study did not seem to be influenced by peer pressure to smoke. Although, research with Hispanic youth and adults in the United States points to cross-cultural differences, it is important to keep in mind potential sociocultural differences between our sample of youth in Chile and Hispanic youth in the United States. Although, research with U.S. Hispanic families can shed light on youth smoking and smoking-related attitudes among youth in Chile, further research is needed that investigates whether findings with U.S. Hispanic youth generalize to youth in Chile.

As expected, parental smoking was associated with fewer negative cigarette attitudes in boys and girls. These findings

indicate that Chilean youth with parents who smoke have more positive attitudes toward smoking than youth without parents who smoke. Therefore, efforts to reduce smoking among Chilean youth may benefit from concurrently reducing smoking in parents (Smet et al., 1999). Contrary to expectations, parental monitoring and parent–child communication about the dangers of drugs were not associated with Chilean youth’s attitudes. It is possible that for Chilean youth, parents’ own smoking plays a more important role on their children’s smoking than what they say about drugs. Continued research is clearly needed that examines more closely the role of parental monitoring and communication on smoking-related attitudes in Chilean youth.

Parental control was associated with more negative attitudes in girls but not in boys. Although the association was only marginally significant, girls who reported more parental control reported more negative attitudes. Given limited research on the role of parental control in youth smoking, it is difficult to draw definite conclusions from our findings. Scholars propose that too much and too little control lead to risk behaviors among youth, and moderate levels of control are most adaptive (Baumrind, 1966). Others have suggested that parental control interacts with other parent–child relationship variables, such as parental monitoring and knowledge, thereby creating complex ways in which parental control influences youth (Engels, Finkenauer, Kerr, & Stattin, 2005). More research is needed to understand these associations.

Adolescent perceptions of school prevention efforts were not associated with adolescents’ smoking-related attitudes. Nelson (2003) reported an inverse relationship between smoking and school-based education on the dangers of smoking among youth from developing countries. The current study assessed students’ perceptions of the vigorous nature of school efforts to prevent smoking. We did not assess students’ exposure to classes or other school-based prevention efforts. With this limited information, it is premature to conclude that school prevention efforts do not influence Chilean youth’s smoking-related attitudes. Future studies should assess whether school prevention programs are in place in Chilean schools and whether exposure to prevention programs influences students’ smoking behaviors and attitudes. This information can inform the development of youth tobacco control policies in Latin America. According to the Inter-American Drug Abuse Control Commission CICAD (2009/2010), Chilean schools are implementing school-based prevention programs, but information about their effectiveness is nonexistent.

Exposure to prosmoking ads was not associated with adolescents’ attitudes. This finding corroborates results from the Global Youth Tobacco Survey (Warren et al., 2006) and suggests that counter-smoking campaigns are neutralizing the effects of tobacco ads, which seem to be effective in reducing tobacco use (Fiore & Baker, 2009). They may also counter the effects of prosmoking advertisements.

In the current study, the difficulty that adolescents perceived in accessing cigarettes was positively associated with negative attitudes toward cigarettes. Nelson (2003) found that boys’ and girls’ smoking was positively affected by the ease of buying cigarettes. Policy efforts to prevent youth smoking in Chile and other Latin American countries should continue and strengthen its focus on banning sales of cigarettes to minors and on restricting cigarette accessibility.

As with any research, there are limitations to this study. Data were obtained via youth self-report, which prevented us from directly examining friends’, parents’, teachers’, and school officials’ information. Students may have underreported their smoking and provided misrepresentation of their smoking-related attitudes. Similarly, students may have under or overreported aspects of our independent variables. Thus, future studies should collect data from various informants to avoid this self-report bias. Moreover, our data are cross-sectional in nature, which can suggest but not demonstrate that peer, parental, and environmental factors lead to more negative views of cigarettes. Future studies should examine these associations over time. Although, the current study contributes to our understanding of factors influencing youth’s smoking-related attitudes, future studies should aim at examining whether smoking-related attitudes mediate the association of peer, parent, and environmental factors with smoking initiation among youth.

Lastly, not all our hypotheses were confirmed. For example, we had expected parental communication about the dangers of drugs to be associated with more negative attitudes toward cigarettes, but we parent–child communication was not associated with youth’s attitudes toward cigarettes. It is possible that a measure that directly tapped into parent–child communication about smoking would have revealed different results. Alternatively, it is possible that our results are due to self-report bias, and studies should aim at replicating our results with different informants or measures.

Notwithstanding above limitations, this study contributes to research on factors associated with youth’s negative attitudes toward cigarettes among a large sample of youth from Chile. We not only replicated the associations of smoking-related attitudes with smoking and intentions to smoke, we also examined how Chilean youth’s experiences with peers, parents, in school, and their neighborhoods are associated with their cigarette-related views. Rarely have researchers integrated peer, parent, and environmental factors into one model. This is important because youth attitudes are likely the result of experiences in multiple life domains. We also examined the role of gender, which can further provide insights into how programs need to be tailored toward Chilean adolescents. Attention to gender differences can serve to better inform the next generation of policies and interventions (e.g., effective tobacco cessation treatments) that are under consideration (2009). Research on smoking among youth from Chile is scarce, and this study contributes to our understanding of Chilean youths’ smoking-related attitudes.

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Declaration of Interests

None declared.

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